

Response
Application No. 10/501,080
Attorney Docket No. 042440

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Listing of Claims

1. (Currently amended): A method for gettering a transition metal impurity diffused in a silicon crystal at ultra high-speeds to form deep impurity levels therein, said method comprising the steps of:

codoping two kinds of impurities consisting of oxygen (O) and carbon (C), into silicon at a concentration equal to or greater than that of at least one transition metal impurity selected from the group consisting of Co, Ni and Cu which are released from a raw material during a process of forming a silicon single crystal and mixed in said silicon crystal, and Cu which is mixed in a silicon wafer during a process of printing a Cu wiring; and

thermally annealing said impurity-doped silicon by a single heating, the single heating being at a temperature ranging in a temperature range from 250°C to 500°C to form a transition metal-O-C complex comprising an atom of said transition metal impurity, said C and said O, so as to precipitate said ~~impurity~~ impurity complex at an interstitial position in said silicon crystal, whereby said transition metal impurity is confined in said silicon crystal to prevent the ultra high-speed diffusion of said transition metal impurity and electrically deactivate deep impurity levels to be induced by said transition metal impurity.

Response
Application No. 10/501,080
Attorney Docket No. 042440

2. (Canceled)

3. (Original): The method as defined in claim 1, wherein said codoping step includes codoping oxygen (O) in a natural manner and carbon (C) in an artificial manner, or both oxygen (O) and carbon (C) in an artificial manner, into a silicon melt during a silicon single crystal growth through a Czochralski crystal pulling process.

4. (Original): The method as defined in claim 1, wherein said codoping step includes ion-injecting an oxygen ion and a carbon ion into a silicon wafer to codope both oxygen (O) and carbon (C) in an artificial manner, into said silicon wafer.